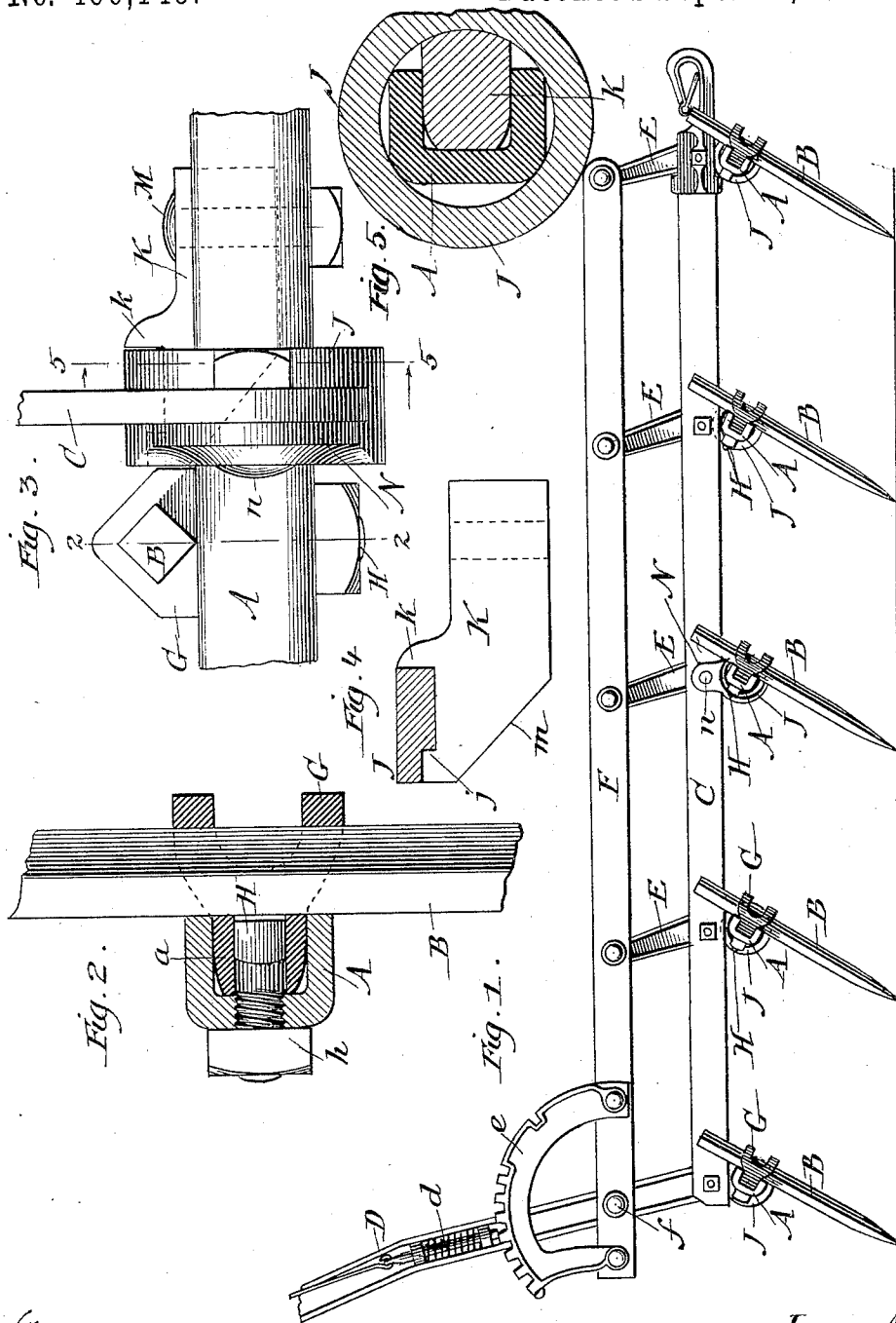


(No Model.)

G. MOORE.
HARROW.

No. 460,149.

Patented Sept. 29, 1891.



Witnesses:

John L. Jackson.
Frank A. Blanchard

Inventor:

Gilpin Moore
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UNITED STATES PATENT OFFICE.

GILPIN MOORE, OF MOLINE, ILLINOIS, ASSIGNOR TO THE DEERE & COMPANY,
OF SAME PLACE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 460,149, dated September 29, 1891.

Application filed November 20, 1890. Serial No. 371,992. (No model.)

To all whom it may concern:

Be it known that I, GILPIN MOORE, residing at Moline, county of Rock Island, State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Harrows, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a detail, being in section, through one of the devices for securing a tooth in place. Fig. 3 is a detail, being a plan view of one of the sockets and channel-iron. Fig. 4 is a detail showing the casting which fills out the channel-iron, for purposes hereinafter set forth; and Fig. 5 is a detail, being a section on line 5 5 of Fig. 3.

This invention relates to harrows, and particularly to the so-called "lever-harrows."

The object of this invention is to provide an improved bearing for the channel-iron which supports the harrow-teeth, so that the harrow-teeth can be revolved about a central line, leaving to the tooth the least possible leverage and liability to breakage. I accomplish this object, as illustrated in the drawings and as hereinafter described. That which I claim as new will be pointed out in the claims.

In the drawings, A indicates a number of channel-bars for supporting the harrow-teeth B. These channel-bars are connected by a number of bars C, one only being shown, as one is sufficient to illustrate my invention.

As shown, to the rear channel-bar A is attached a lever D. This lever D is provided with a spring-pawl *d*. To each of the channel-bars A, in advance of the one to which the lever D is attached, is secured an arm E. To the upper end of each arm E is pivoted a bar F, which is also pivoted to the lever D upon a pivot *f*. The bar F is provided with a segment *e*, which is adapted to be engaged by the spring-pawl *d*, as best shown in Fig. 1. The harrow-teeth may be adjusted by means of the lever D in a manner similar to that in which such adjustment has been heretofore obtained.

The construction above described is similar to that of harrows now in use.

The harrow-teeth B are each secured to the

channel-bars A, as best shown in Fig. 2, by means of a clip G, one for each tooth B. A bolt H, by means of a nut *h*, draws the clip toward the channel-bar A, and consequently draws the tooth B against the channel-bar.

The chief part of my invention is in my improved device for connecting the channel-bars A with the connecting-bar C. It will be observed that the channel-bars A are somewhat rounded in form, as best shown in Fig. 5. Around the channel-bars A at the proper points are placed circular sockets or collars J. Into the channel-bar A and each socket or collar J is slipped a special filler-block K, as best shown in Figs. 3 and 5. This filler-block K may be a malleable casting, and, as shown in Fig. 4, it is provided with a shoulder *k*, which is adapted to fit against one edge of the collar J, and with a shoulder *j*, which is adapted to fit against the opposite edge of or a shoulder on the collar J. One corner of this filler-block K is cut off, as shown at *m* in Fig. 4, to facilitate its insertion within the collar and channel-bar A. The filler-block K is secured in position by means of a bolt M, which passes through it and the channel-bar A, as indicated in Fig. 3.

The outer surface of the channel-bar and of the filler-block K forms a nearly-circular bearing, around which the collar J fits and whose center is about the center or axis of the channel-bar A.

Each collar J is provided with an arm N, which is secured to the bar C by means of a bolt *n*, as best shown in Fig. 1.

It will be observed on reference to Fig. 5 that the channeled bar A is angular in cross-section and that the filler-block is inserted into the channel of the bar, so that there are in fact five distinct bearing-points against the interior of the collar J, which is a desirable feature in that excessive friction is avoided.

By my construction of channeled bar and filler-block inserted into the channel of the bar I am enabled to construct the collar J of a solid or single piece and therefore obtain a more desirable and more economical construction than if the collar were made in separate sections bolted together. The channeled bar A and the filler-block K, inserted into the channel thereof, constitute a bearing

which rotates within the circular collar J, and the center of this bearing is approximately the center of the channeled bar, so that in rotating or rocking the channeled bar rotates
5 about such center or axis, and thereby materially reduces leverage action on the harrow-teeth, which has been found objectionable in many harrows as heretofore constructed.

It will be obvious that by manipulating the
10 lever D the bar F is reciprocated and a rocking motion imparted to the channeled bars through the medium of the arms E, which are connected with the channeled bars. By the use, therefore, of the device described for con-
15 necting the channel-bars with the connecting-bars C the channel-bars and teeth B can be adjusted by means of the lever D with the least amount of leverage to the harrow-teeth, and consequently with the least liability to
20 breakage. It will be observed that the harrow-teeth are held against the edge of the channel-bars and that, therefore, they rock approximately upon the center of the channel-bar.

What I claim as new, and desire to secure 25 by Letters Patent, is—

1. In a harrow, the combination, with connecting-bars C and collars or sockets J attached thereto, of the channel-bars A, carrying harrow-teeth and extending through the
30 collars or sockets, and a filler-block K, inserted into the channel of each channel-bar, resting against the bottom wall thereof, and turning therewith in contact with a collar or socket, substantially as described. 35

2. In a harrow, the combination, with the circular sockets J, of the channel-bars A, carrying harrow-teeth and extending through the sockets, and a filler-block K, provided with the shoulders *j k* and cut-away corner *m*
40 and inserted into the channel of each channel-bar to rest against the bottom wall thereof and turn therewith in contact with a collar or socket, substantially as described.

GILPIN MOORE.

Witnesses:

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